

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application.

#### **Listing of Claims:**

Claims 1-91 (Canceled)

92. (New) A system for exploring a set of decision alternatives wherein each of said decision alternatives in said set comprises a plurality of performance attributes, said system comprising:
- (a) a first computer program that produces a subset of said set of decision alternatives using a filter that:
    - (i) compares at least two performance attributes for each decision alternative to respective performance attributes for other decision alternatives in said set of decision alternatives; and
    - (ii) excludes decision alternatives from said set of decision alternatives based on a plurality of dominance criteria wherein decision alternatives that are inferior to any of the other decision alternatives with respect to said at least two performance attributes are excluded from said set of decision alternatives; and
  - (b) a second computer program, in communication with said first computer program, that presents in a scatterplot said subset of said set of decision alternatives produced by said filter, wherein each axis of said scatterplot represents a dominance criterion of said decision alternatives.

93. (New) The system of claim 92 wherein said filter of said first computer program passes Pareto optimal decision alternatives.
94. (New) The system of claim 92 wherein said filter of said first computer program uses tolerated dominance criteria to eliminate decision alternatives.
95. (New) The system of claim 92 wherein said second computer program is adapted to link scatterplots such that decision alternatives selected within a first scatterplot are highlighted within at least one other scatterplot.
96. (New) The system of claim 92 wherein said second computer program is adapted to zoom in on a selected subset of decision alternatives displayed in said at least one scatterplot.
97. (New) The system of claim 29 wherein decision alternatives selected within said scatterplot are retained in an examination set.
98. (New) The system of claim 97 wherein said second computer program is adapted to create unions, intersections, and subsets of examination sets in said scatterplot.
99. (New) The system of claim 97 wherein said second computer program is adapted to apply an abstraction agent to decision alternatives in said examination set, said abstraction agent adapted to automatically form at least one type of generalization about decision alternatives in said examination set.
100. (New) The system of claim 97 wherein said second computer program is adapted to apply a clustering algorithm to decision alternatives in said examination set.

101. (New) The system of claim 97 wherein said second computer program is adapted to apply a spatial analysis algorithm to decision alternatives in said examination set.
102. (New) A computerized system for exploring a discrete set of decision alternatives according to multiple performance attributes comprising:
- (a) a seeker software process for producing a set of evaluated decision alternatives from said discrete set of decision alternatives by:
    - (i) acquiring a plurality of decision alternatives for said discrete set of decision alternatives, each of said plurality of decision alternatives comprising a plurality of performance attributes for representing said decision alternatives;
    - (ii) specifying at least two evaluation criteria related to said plurality of performance attributes;
    - (iii) evaluating said plurality of decision alternatives by comparing said evaluation criteria to said performance attributes of said plurality of decision alternatives; and
    - (iv) adding decision alternatives with performance attributes meeting said evaluation criteria to said set of evaluated decision alternatives;
  - (b) a filter software process for applying a multi-criterial filter algorithm to said set of evaluated decision alternatives to produce a subset of decision alternatives by:

- (i) specifying at least two performance attributes of said evaluated decision alternatives for filtering said evaluated decision alternatives;
  - (ii) comparing said least two performance attributes of each evaluated decision alternative to corresponding performance attributes of other evaluated decision alternatives; and
  - (iii) excluding evaluated decision alternatives that are inferior to other evaluated decision alternative according to said at least two performance attributes from said set of evaluated decision alternatives to produce said subset of decision alternatives containing only decision alternatives that are trade-offs with respect to each other; and
- (c) a viewer software process for displaying graphical representations and enabling examination of decision alternatives in said subset of decision alternatives according to said at least two performance attributes by:
- (i) creating at least one scatterplot wherein each axis represents one of said at least two performance attributes of said decision alternatives and each point on said scatterplot represents a decision alternative that survived said filter software process for producing said subset of decision alternatives; and
  - (ii) wherein each decision alternative in said scatterplot is from said subset of decision alternatives containing only decision

alternatives that are trade-offs with respect to each other.

103. (New) The system of claim 102 wherein said seeker software process acquires said plurality of decision alternatives by retrieving said plurality of decision alternatives from a database.
104. (New) The system of claim 102 wherein said seeker software process acquires said plurality of decision alternatives by generating said plurality of decision alternatives.
105. (New) The system of claim 104 wherein said seeker software process generates said plurality of decision alternatives by selecting components from a device library, combining said components according to a template, and varying component parameters.
106. (New) The system of claim 105 wherein said seeker software process determines whether to generate additional decision alternatives according to evaluations based on said evaluation criteria.
107. (New) The system of claim 102 wherein said seeker software process acquires said plurality of decision alternatives using a compositional modeling language and corresponding simulator to generate said discrete set of decision alternatives and evaluate them according to said evaluation criteria using simulations.
108. (New) The system of claim 102 wherein said multi-criterial filter algorithm of said filter software process is selected from the group consisting of classical dominance filter, strict dominance filter, superstrict dominance filter, selective

superstrict dominance filter, discernible difference dominance filter, two-pass tolerated filter, and onionskin filter.

109. (New) The system of claim 102 wherein said multi-criterial filter algorithm of said filter software process uses a tolerated dominance method to produce said subset of decision alternatives.
110. (New) The system of claim 102 wherein said viewer software process links scatterplots for specification of more than two performance attributes.
111. (New) The system of claim 102 wherein said viewer software process supports selection of decision alternatives for examination and discarding.
112. (New) A computerized method for exploring a discrete set of decision alternatives according to multiple performance attributes comprising:
  - (a) producing a set of evaluated decision alternatives by:
    - (i) acquiring a plurality of decision alternatives for said discrete set of decision alternatives, each of said plurality of decision alternatives comprising a plurality of performance attributes;
    - (ii) specifying at least two evaluation criteria related to said plurality of performance attributes;
    - (iii) evaluating said plurality of decision alternatives by comparing said evaluation criteria to said performance attributes of said plurality of decision alternatives; and
    - (iv) adding decision alternatives with performance attributes meeting said evaluation criteria to said set of evaluated decision

alternatives;

(b) applying a multi-criterial filter algorithm to produce a subset of decision alternatives from said set of evaluated decision alternatives by:

- (i) specifying at least two performance attributes for filtering said decision alternatives;
- (ii) comparing said least two performance attributes of each evaluated decision alternative to corresponding performance attributes of other evaluated decision alternatives;
- (iii) excluding evaluated decision alternatives that are inferior to other evaluated decision alternatives according to said at least two performance attributes to produce said subset of decision alternatives containing only decision alternatives that are trade-offs with respect to each other; and

(c) displaying graphical representations and enabling examination of decision alternatives in said subset of decision alternatives according to said at least two performance attributes by:

- (i) creating at least one scatterplot wherein each axis represents one of said at least two performance attributes of said decision alternatives and each point on said scatterplot represents a decision alternative that survived said multi-criterial filter algorithm for producing said subset of decision alternatives; and
- (ii) wherein each decision alternative in said scatterplot is from said

subset of decision alternatives containing only decision alternatives that are trade-offs with respect to each other.

113. (New) The method of claim 112 wherein acquiring said plurality of decision alternatives comprises retrieving said plurality of decision alternatives from a database.
114. (New) The method of claim 112 wherein acquiring said plurality of decision alternatives comprises generating said plurality of decision alternatives.
115. (New) The method of claim 114 wherein generating said plurality of decision alternatives comprises selecting components from a device library, combining said components according to a template, and varying component parameters.
116. (New) The method of claim 115 wherein generating said plurality of decision alternatives comprises generating additional decision alternatives according to evaluations based on said evaluation criteria.
117. (New) The method of claim 112 wherein acquiring said plurality of decision alternatives comprises using a compositional modeling language and corresponding simulator to generate said discrete set of decision alternatives and evaluate them according to said evaluation criteria using simulations.
118. (New) The method of claim 112 wherein applying a multi-criterial filter algorithm to produce a subset of decision alternatives from said set of evaluated decision alternatives comprises applying a multi-criterial filter algorithm selected from the group consisting of classical dominance filter, strict dominance filter, superstrict dominance filter, selective superstrict dominance



filter, discernible difference dominance filter, two-pass toleranced filter, and onionskin filter.

119. (New) The method of claim 112 wherein applying a multi-criterial filter algorithm to produce a subset of decision alternatives from said set of evaluated decision alternatives comprises applying a toleranced dominance filter to produce said subset of decision alternatives.
120. (New) The method of claim 112 further comprising linking scatterplots for specification of more than two performance attributes.
121. (New) The method of claim 112 wherein enabling examination of decision alternative comprises enabling selection and discarding of decision alternatives in said scatterplot.